

METHOD FOR GENERATING HYDROGEN FOR FUEL CELLS

ABSTRACT OF THE DISCLOSURE

A method of generating a H₂ rich gas from a fuel includes supplying a mixture of molecular oxygen, fuel, and water to a fuel processor, and converting the
5 mixture of molecular oxygen, fuel, and water in the fuel processor to the H₂ rich gas. The fuel has the formula C_nH_mO_p where n has a value ranging from 1 to 20 and is the average number of carbon atoms per mole of the fuel; m has a value ranging from 2 to 42 and is the average number of hydrogen atoms per mole of the fuel; and p has a value ranging from 0 to 12 and is the average number of oxygen atoms per mole of the
10 fuel. The molar ratio of molecular oxygen supplied to the fuel processor per mole of fuel is a value ranging from about 0.5x₀ to about 1.5x₀, and the value of x₀ is equal to $0.312n - 0.5p + 0.5(\Delta H_{f, \text{fuel}}/\Delta H_{f, \text{water}})$ where n and p have the values described above, $\Delta H_{f, \text{fuel}}$ is the heat of formation of the fuel, and $\Delta H_{f, \text{water}}$ is the heat of formation of water.